

## CLAIMS

### What is claimed is:

1. A method for multi-protocol label switching (MPLS) link protection comprising the steps of:

- 5                   checking that a label switching path (LSP) breaks down;
- redirecting the LSP to a backup LSP with no bandwidth reservation;
- rearranging to obtain an auxiliary backup LSP according to the current resource distribution in the MPLS network;
- checking if the broken LSP is recovered; and
- 10                  restoring the LSP.

2. The method of claim 1, wherein in the step of checking that a label switching path (LSP) breaks down a router before the breaking point sends out a fault information signal to an ingress router of the LSP.

3. The method of claim 2, wherein the router before the breaking point  
15 simultaneously sends at least two of the fault information signals.

4. The method of claim 1, wherein each of the default backup LSP's is defined according to the transmission capacities of the LSP and of the backup LSP.

5. The method of claim 1 further comprising the step of waiting a default failure time before the step of rearranging to obtain an auxiliary backup LSP according to the current  
20 resource distribution in the MPLS network.

6. The method of claim 1, wherein in the step of checking if the broken LSP is recovered a router before the breaking point sends a recovery signal to an ingress router of

the LSP.

7. The method of claim 6, wherein the router before the breaking point simultaneously sends two of the signals.

8. The method of claim 1 further comprising the step of waiting a default available  
5 time before the step of restoring the LSP.

9. The method of claim 1, wherein the step of restoring the LSP rearranges to obtain a restored LSP according to the current resource distribution of the MPLS network and redirects the LSP to the restored LSP.